

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A coupling element, comprising:
a substrate;
an optical guide core formed in said substrate; and
an optical cladding formed in said substrate, said optical cladding being independent of the optical guide core and surrounding at least one portion of the optical core in a zone of interaction,
wherein a structure defining the cladding is modulated at least in the zone of interaction so as to form a coupling grating between the optical guide core and the optical cladding, and
wherein a refractive index of the cladding is different from a refractive index of the substrate and lower than a refractive index of the core at least in a part of the cladding adjacent the optical guide core in the zone of interaction.
2. (Previously Presented) The coupling element of claim 1, wherein a section of said structure is modulated.
3. (Previously Presented) The coupling element of claim 1, wherein a position of said structure with respect to the core is modulated.
4. (Previously Presented) The coupling element of claim 1, wherein said structure is modulated by ionic implantation, or ionic exchange or local heating.
5. (Previously Presented) The coupling element of claim 1, wherein said coupling grating formed by modulation of said structure is an apodized grating.
6. (Previously Presented) The coupling element of claim 2, wherein the coupling grating formed by modulation of the section is a chirped grating.

7. (Previously Presented) A method for fabricating a coupling element, said coupling element comprising a substrate, an optical guide core, and an optical cladding formed in said substrate, said optical cladding being independent of the optical guide core and surrounding at least one portion of the optical core in a zone of interaction, the method comprising:

modifying a refractive index of a substrate to form the optical guide core; and

modifying the refractive index at least in a part of the substrate adjacent the optical guide core and at least in the zone of interaction to form the optical cladding,

wherein a refractive index of the optical cladding is different from a refractive index of the substrate and lower than a refractive index of the optical guide core, and

wherein a structure defining the optical cladding in the zone of interaction is modulated to form a grating.

8. (Currently Amended) The method of claim 7, wherein the refractive index of the substrate is modulated by radiation, ~~and/or~~ by introduction of ionic species or both.

9. (Previously Presented) The method of claim 8, wherein the substrate includes glass, KTP, LiNbO₃ or LiTaO₃.

10. (Previously Presented) The method of claim 8, further comprising:

a) exposing the substrate to a first ionic species,

b) exposing the substrate to a second ionic species, and

c) burying said first and said second ionic species to obtain the optical cladding and the optical guide core.

11. (Currently Amended) The method of claim 10, further comprising:

defining a first mask comprising a first pattern configured to define the cladding, said first ionic species being introduced through said first mask,

removing said first mask, and

defining a second mask comprising a second pattern configured to define the optical core, said second ionic species being introduced through said second mask.

12. (Currently Amended) The method of claim 11, wherein the first pattern of the first mask is configured to define a modulation of said structure to form the grating.

13. (Currently Amended) The method of claim 11, wherein the first pattern of the first mask is uniform, and wherein said structure is modulated by local heating of the optical cladding.

14. (Previously Presented) The method of claim 10, further comprising:
defining a mask comprising a pattern configured to define the optical cladding and the optical guide core, the first and the second ionic species being introduced through said mask, and
locally heating said structure to modulate said structure.

15. (Currently Amended) The method of claim 11, wherein said first and second ~~mask~~ masks are made of chrome, alumina or dielectric material.

16. (Previously Presented) The method of claim 10, wherein said burying comprises depositing at least one layer of material with a refractive index lower than that of the cladding on the surface of the substrate.

17. (Previously Presented) The method of claim 10, wherein the burying comprises applying an electrical field to the substrate.

18. (Currently Amended) The method of claim 10, wherein the substrate includes glass and Na^+ ions, and wherein the first and second ionic species include Ag^+ ~~and/or~~ or K^+ ions.